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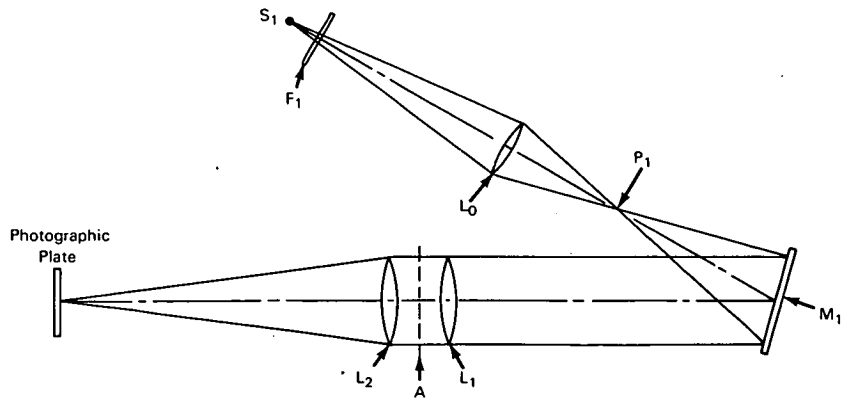
Brief 68-10071

NASA TECH BRIEF

Improved Optical Diffractometer



This diffractometer, designed for diffraction measurements in the visible and near-infrared spectral regions, features several improvements over the Thompson-Wolf diffractometer which is normally used in connection with X-ray structure analysis (Journal of the Optical Society of America, vol. 47, no. 10, October 1957). The improved instrument provides higher resolution of diffraction patterns, an alternate illumination section for coherent light (from a laser source), a unique alignment and adjustment arrangement for the optical system, and a very stable mounting.

The light from the partially coherent illumination source S_1 passes through the narrow bandpass filter F_1 to lens L_0. This lens focuses the light on pinhole P_1, which acts as the source, or object, at the axial focal plane of lens L_1. Mirror M_1 reflects the light from P_1 to lens L_1, which collimates the light to the diffraction specimen (A) positioned between lenses L_1 and L_2. Lens L_2 collects the diffracted light from the specimen and focuses it upon the photographic plate or alternately in the observation plane of a microscope (not shown). When a coherent illumination source is used, S_1 and F_1 are removed.

The diffractometer was designed and constructed as a permanent instrument.

Complete design details may be obtained from:

Technology Utilization Officer
Manned Spacecraft Center
Houston, Texas 77058
Reference: B68-10071

Patent status:

No patent action is contemplated by NASA.

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(MSC-12055)

Category 02